REMARKS

Request for an Examiner's Interview

The Applicant's Attorney hereby requests an interview with the Examiner in order to expedite the prosecution of this case.

Pending Claims

Claims 1-39 have been cancelled. Claims 40-81 are pending in the present application. Independent claims 40 and 69 have been amended. The Applicant respectfully requests reconsideration of the pending claims in light of the amendments, arguments, and remarks presented in this Amendment and Response.

Allowable Subject Matter

The Applicant acknowledges with appreciation the statement made in the Office Action dated December 27, 2006 which indicates that dependent claims 57, 60, and 61 are allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Rejections under 35 U.S.C. §102

Claims 40-56, 58-59, 62-66 and 69-81 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,093,290 to Tamura et al. (hereinafter "Tamura"). The Office Action states that Tamura discloses the method of magnetron sputtering that is claimed in independent claim 40. In particular, the Office Action states that the step of

varying an amount of material deposited on said substrate per time unit from said magnetron source that is cyclically and phase-locked with said cyclically moving said magnetron magnetic field pattern is disclosed in Tamura.

The Office Action argues that Tamura discloses a roll-to-roll system and the film forming region requires uniform thickness. The Office Action also argues that Tamura discloses moving the magnetic flux in a circular pattern. The Office Action refers to column 2, lines 35-36 and to column 6, lines 8-35 in support his arguments. Tamura Column 2, lines 35-36 describes a problem with the prior art where a non-uniformity of the film thickness along the direction of a moving belt-like substrate is observed.

Tamura describes methods and apparatus that use a reciprocating motion of a tunnel-like magnetic flux that is controlled such that when the belt-like substrate moves a distance in the direction of moving the belt-like substrate, the reciprocating motion of the tunnel-like magnetic flux becomes opposite in direction. The speed of moving the tunnel-like magnetic flux in the direction of the motion of the belt-like substrate when the belt-like substrate passes through the region A (See FIG. 1) is substantially equal, but opposite in direction, to that when the belt-like substrate passes through the region B (See FIG. 1). See, for example, Tamura FIGS. 1 and 2 and the text in column 4, lines 44-61.

The result of the methods described in Tamura is that the relative speed of the belt-like substrate with respect to the tunnel-like magnetic fluxes in the direction of the motion of the belt-like substrate can be regarded as a constant value for any part of the belt-like substrate over the whole target. In other words, all parts of the belt-like

substrate are subjected to sputtering for substantially the same sputtering time. The text referred to in the Office Action, column 6, lines 8-35, states that non-uniformities of thickness produced at the first tunnel-like magnetic flux are compensated by a second tunnel-like magnetic flux, and non-uniformities of thickness produced at a third tunnel-like magnetic flux are compensated by a fourth tunnel-like magnetic flux.

Thus, Tamura describes methods and apparatus that move the magnetic field patterns along the target to cancel non-uniformities in thickness. That is, the methods and apparatus described in Tamura are designed to generate uniform films. Thus, the magnetic field patterns along the target described in Tamura do not cause a variation in the total amount of material deposited on the substrate per time unit. Instead, the magnetron magnetic field patterns along the target result in varying the local distribution of material deposited along the substrate area in time. In other words, the total amount of material deposited on the substrate is a constant per time unit.

To anticipate a claim under 35 U.S.C. §102, a single reference must teach every aspect of the claimed invention either explicitly or impliedly. Any feature not directly taught by the reference must be inherently present in the reference. Thus, a claim is anticipated by a reference only if each and every element of the claim is described, either expressly or inherently, in a single prior art reference.

Independent claim 40 has been amended to recite the step of varying a total amount of material deposited on the substrate per time unit from the magnetron source that is cyclically and phase-locked with the cyclically moving the magnetron magnetic

field pattern. This amendment is supported by the originally filed specification. See for example, paragraph 19, FIG. 8, and the text corresponding to FIG. 8 in paragraph 78. Thus, the Applicant submits that independent claims 40 is not anticipated by Tamura because Tamura does not describe, either expressly or inherently, the claimed step of varying the total amount of material deposited on the substrate per time unit. Therefore, the Applicant submits that independent claim 40 is allowable and that dependent claims 41-68 are allowable as depending from an allowable base claim.

Independent claim 69 has been amended to recite a modulation arrangement that cyclically modulates a total amount of material per time unit sputtered off said sputter surface, where the modulation arrangement is phase locked with the drive. This amendment is supported by the originally filed specification. See for example, paragraph 19, FIG. 8, and the text corresponding to FIG. 8 in paragraph 78. Thus, the Applicant submits that independent claims 69 is not anticipated by Tamura because Tamura does not describe, either expressly or inherently, the claimed modulation arrangement that cyclically modulates a total amount of material per time unit. Therefore, the Applicant submits that independent claim 69 is allowable and that dependent claims 70-81 are allowable as depending from an allowable base claim.

Rejections under 35 U.S.C. §103(a)

Claims 67-68 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Tamura. To be unpatentable under 35 U.S.C. §103(a), the differences between the subject matter sought to be patented and the prior art must be

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify or combine the reference teachings.

As described in connection with the rejection of independent claim 40 under 35 U.S.C §102 the Applicant submits that dependent claims 41-67 are allowable as depending from an allowable base claim. Thus, the Applicant submits that independent claims 40 is not obvious over Tamura because Tamura does not teach or suggest the claimed step of varying a total amount of material deposited on the substrate per time unit.

CONCLUSION

Claims 40-81 are pending in the present application. Claims 40 and 69 have been amended. The Applicant respectfully requests reconsideration of the pending claims in light of the amendments, remarks, and arguments presented in this Amendment and Response.

If, in the Examiner's opinion, a telephonic interview would expedite prosecution of the present application, the undersigned attorney would welcome the opportunity to discuss any outstanding issues, and to work with the Examiner toward placing the application in condition for allowance.

Respectfully submitted,

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